

Armed Forces College of Medicine

AFCM



Lymph drainage of H&N & Cervical plexus and Sympathetic chain

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INTENDED LEARNING OBJECTIVES (ILO)



By the end of this lecture the student will be able to:

1. **Locate the various groups of lymph nodes in the head & neck**
2. **List their afferents & efferents.**
3. **Compare between the 3 cervical sympathetic ganglia as regards their position and branches.**
4. **Describe the position, mode of formation & branches of cervical plexus**

Lecture Plan



1. Part 1 (25 min) Lymph drainage of head & neck
2. Part 2 (15 min) Cervical part of sympathetic chain
3. Part 3 (15 min) Cervical plexus

I. Lymph drainage of head & neck

Lymph nodes of Head and Neck

The lymph nodes of head and neck are arranged in:

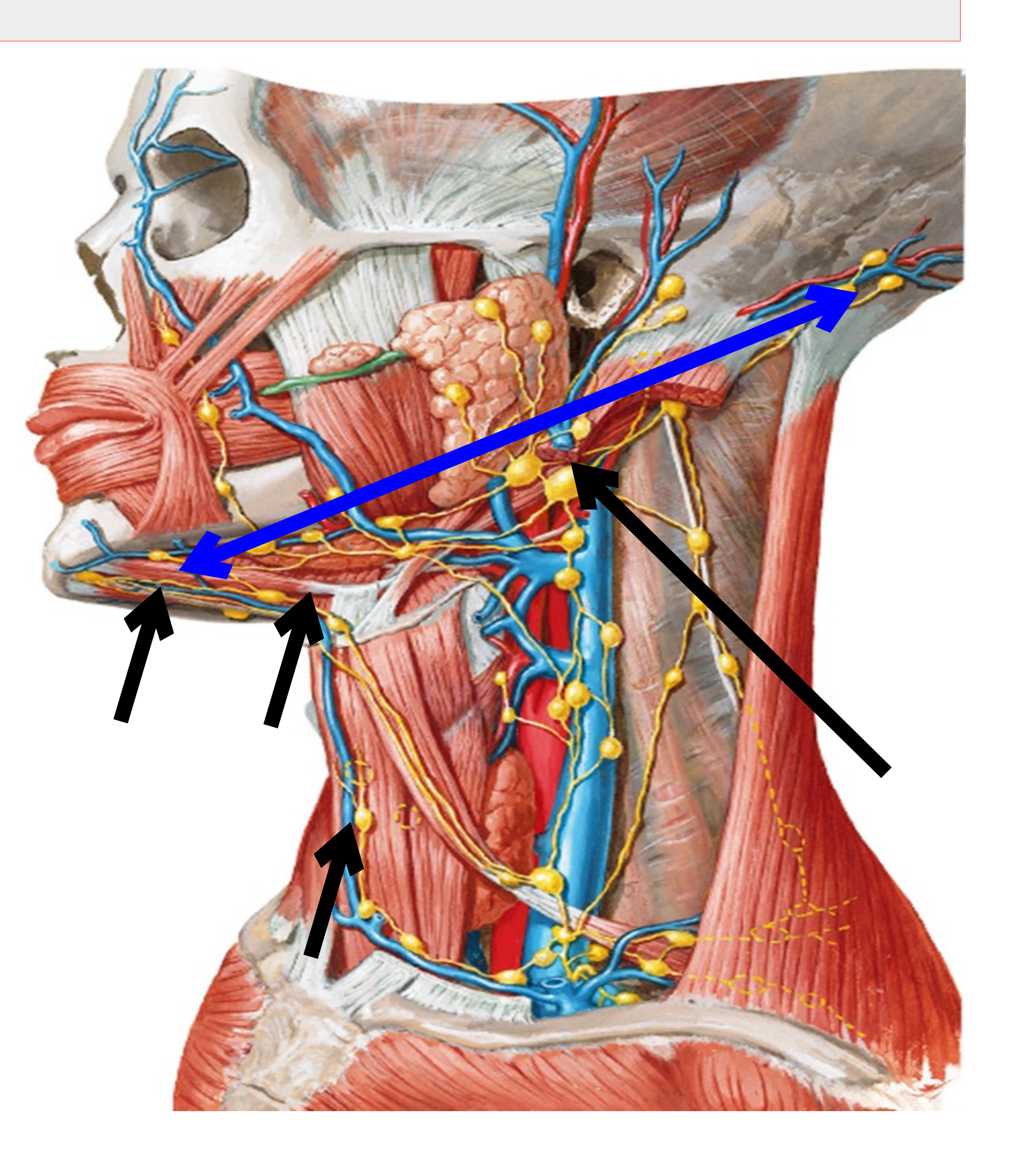
1- Circular group: divided into

1. **Superficial circular group.(upper and lower)**
2. **Deep circular group.**

2- Vertical group: in between the 2 circular groups.

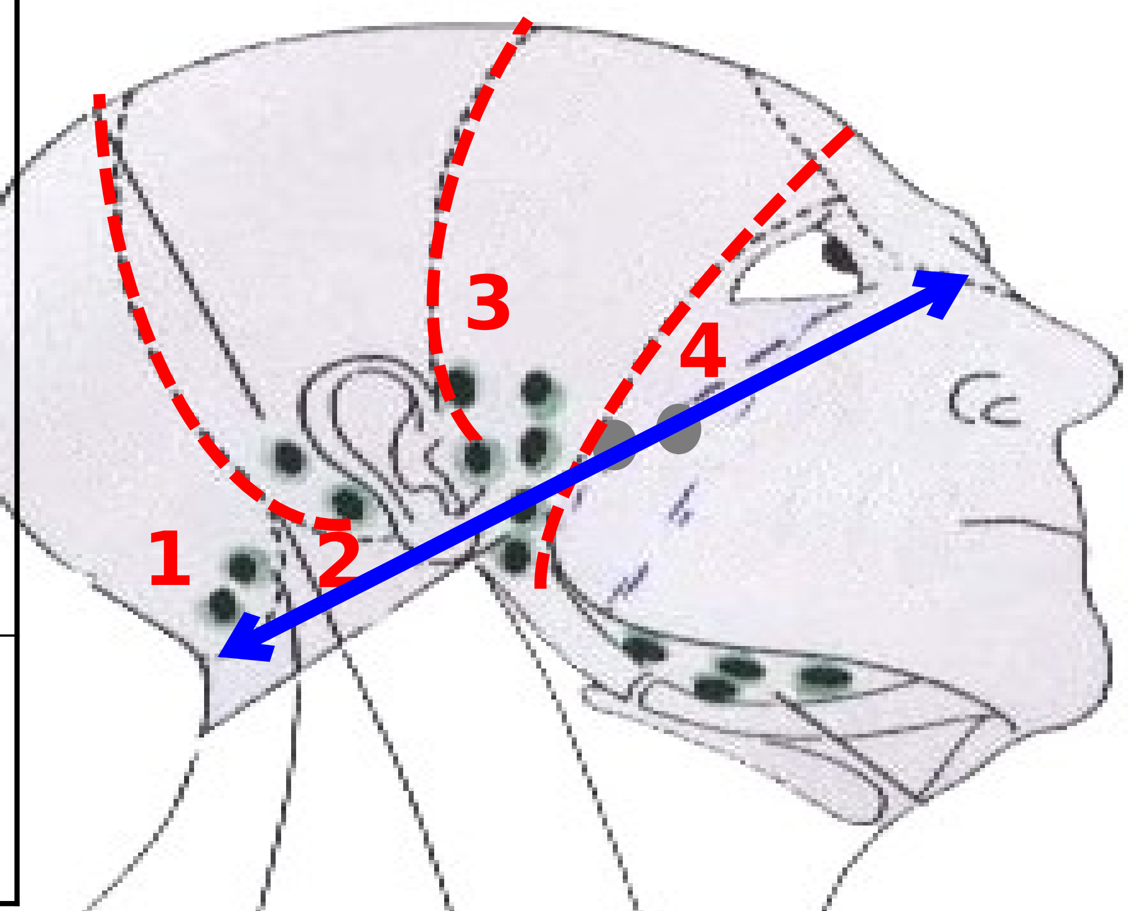
- These groups drain the superficial and the deep structures of the head and neck.

@ The superficial and the deep circular groups drain into the vertical group which is called the deep cervical LNs. lying alongside the I.J.V.



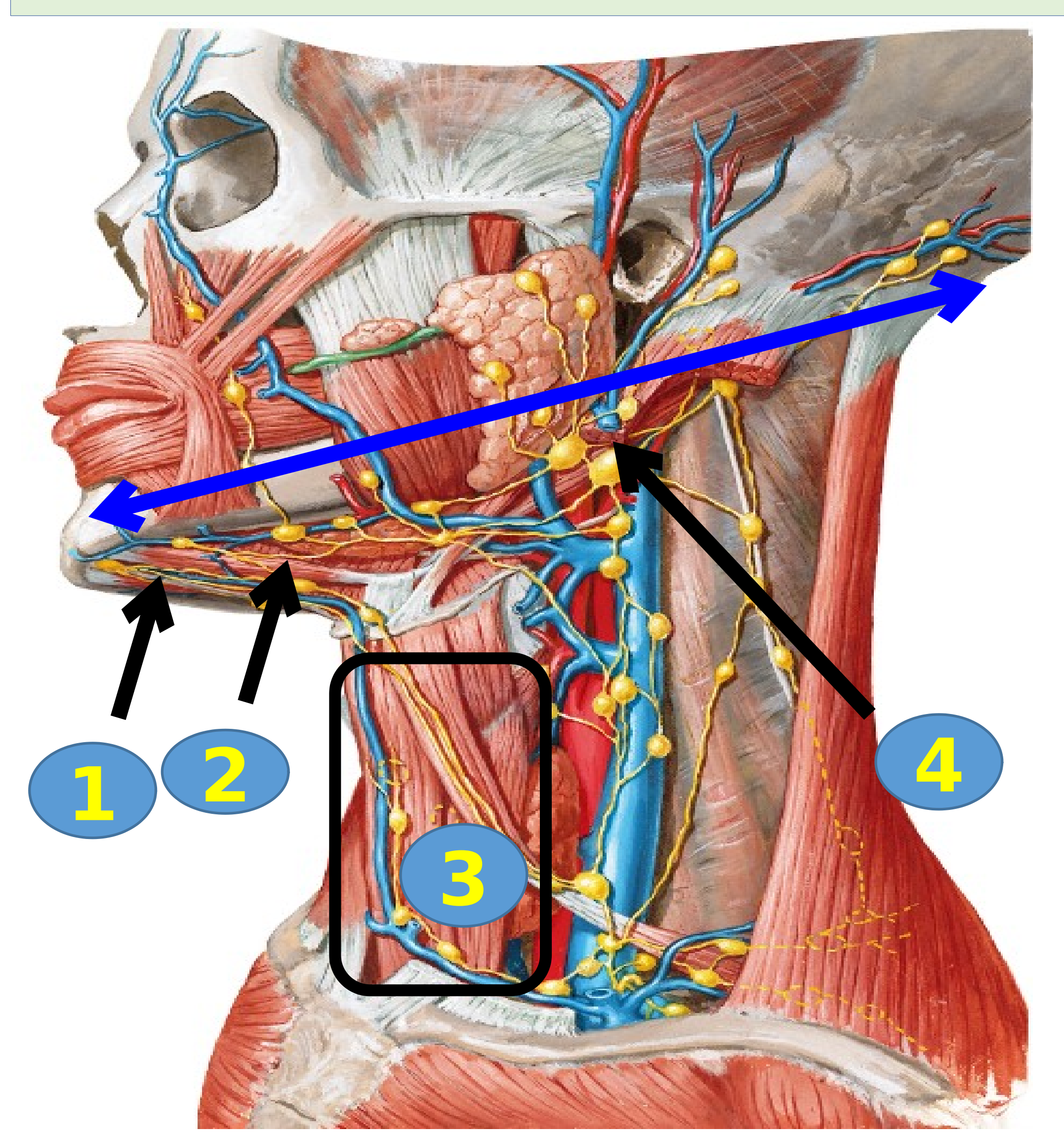
A. Superficial Circular LNs. of Head (Upper group)

Lymph nodes	Site	Area drained	Eff. lymphatics pass to
1. Occipital LNs.	At the apex of the post triangle of neck.	1. Post. part of scalp. 2. Back of neck.	Upper deep cervical LNs
2.Post. Auricular (mastoid) LNs.	Behind the auricle, over the mastoid process.	1. Post. part of scalp. 2. Auricle & ext. auditory meatus.	
3. Pre-auricular (Parotid): superficial & deep) LNs.	On the surface of parotid and embedded inside it .	1. Temporal region. 2. Auricle and ext. auditory meatus. 3. Upper 1/2 face and eye lids. 4. Gums.	
4. Buccal LNs	On buccinator M. and mandible.	1. The cheeks. 2. The lips .	Sub-mandibular LNs



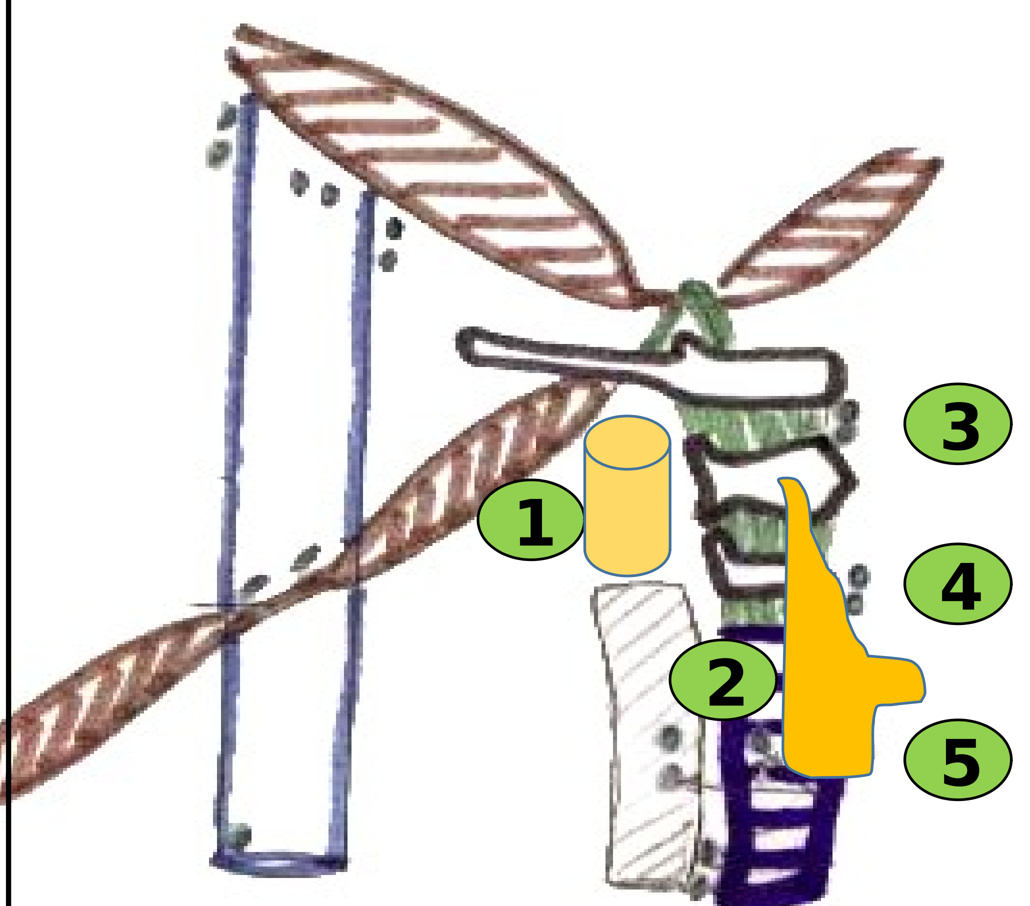
B. Superficial Circular LNs. of Neck (Lower group)

Lymph nodes	Site	Area drained	Eff. lymphatics pass to
1.Submental LNs.	In the submental triangle lying on mylohyoid ms.	1. Tip of tongue (bilateral). 2. Floor of mouth (bilateral).	**Sub-mandibular LNs**
2.Sub-mandibular LNs.	In submandibular region lying on submandibular gland.	1. Most of the face (cheeks, lips & nose). 2. Floor of mouth. 3. Side of tongue.	***Upper deep cervical LNs.** ***Lower deep cervical LNs.**
3. Ant.erior cervical LNs.	Along the ant. jugular V. (AJV), particularly above the sternum (suprasternal LNs.)	Ant. region of neck below hyoid bone.	
4. Superficial cervical LNs	Along the ext. jugular V. (EJV) on the sternomastoid ms.	1. Lobule of ear & ext. auditory meatus 2. Parotid gland	



C. Deep Circular LNs of Head and Neck

Lymph nodes	Site	Area drained	Eff. lymphatics pass to
1. Retro-pharyngeal LNs	Behind the **pharynx**	1.Nasopharynx 2. Paranasal sinuses. 3. Eustachian tube.	**Upper & Lower deep cervical LNs**
2. Para-tracheal LNs.	Alongside the trachea and oesophagus.	1. Rest of pharynx and larynx. 2. Trachea and oesophagus. 3. **Thyroid gland.**	
3. Infra-hyoid LNs.	In front of thyrohyoid membrane.	LARYNX	
4.Pre-laryngeal LNs	In front of the larynx.	(LARYNX, merged cell)	
5. Pre-tracheal LNs	In front of the trachea.	(LARYNX, merged cell)	



D. Vertical Group of Deep Cervical LNs.

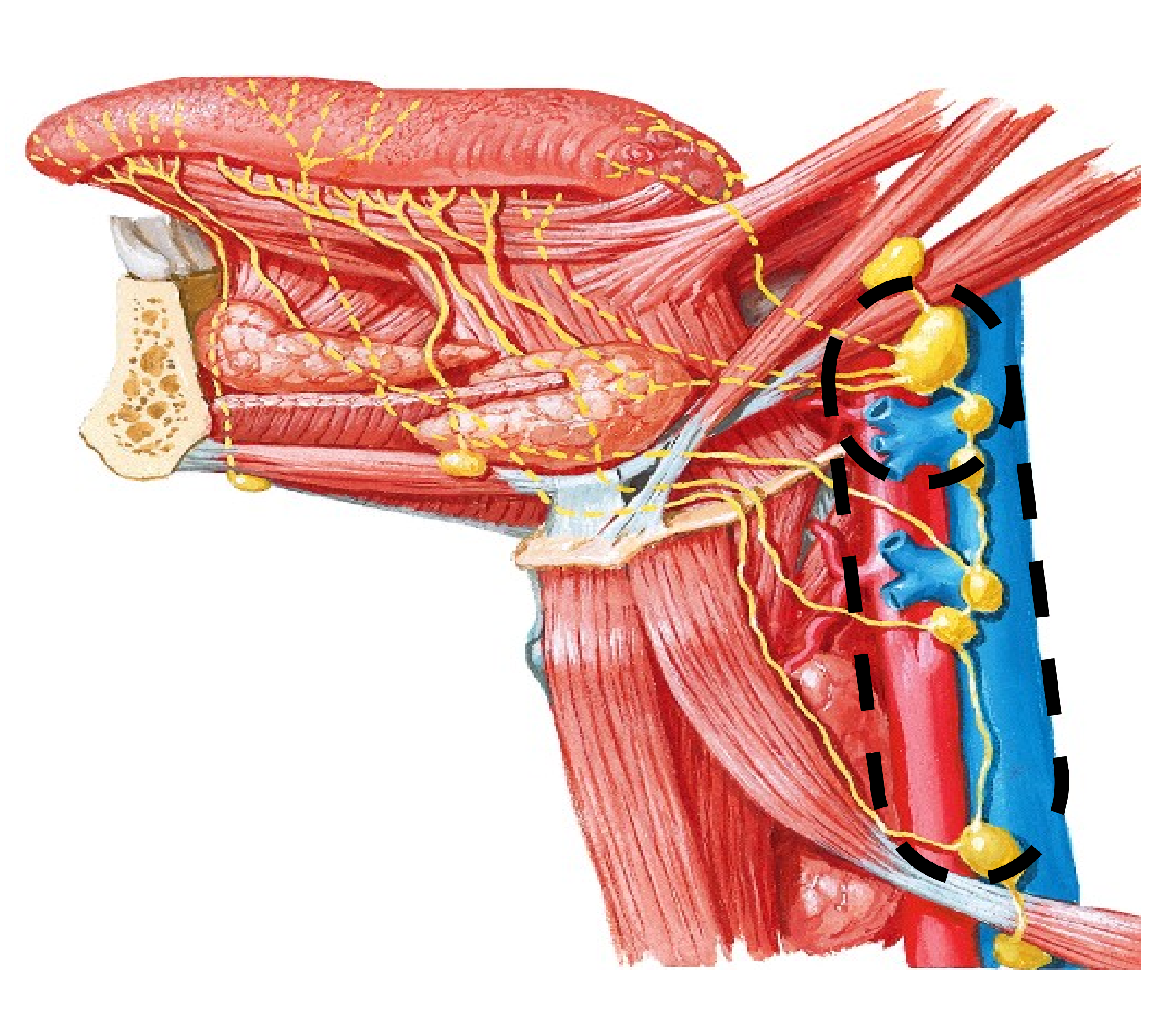
@ **These are the main lymph nodes in the neck.**

@ **They lie alongside the *carotid sheath* closely related to the I.J.V.**

@ **The LNs of this vertical chain are divided into 2 groups:**

1- upper group

2- Lower group



1. Upper deep cervical LNs:

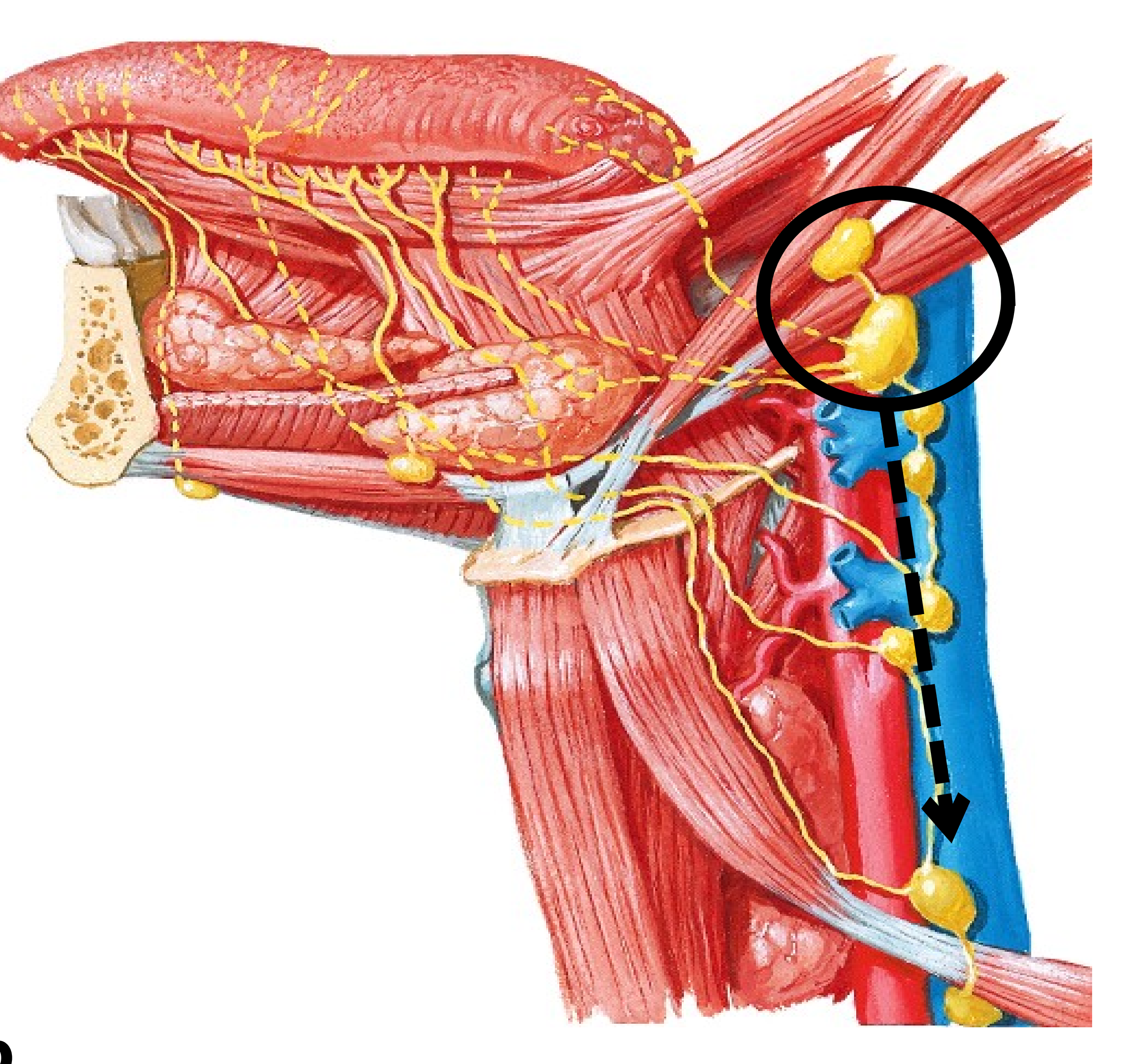
@ Arranged along the upper part of the I.J.V.

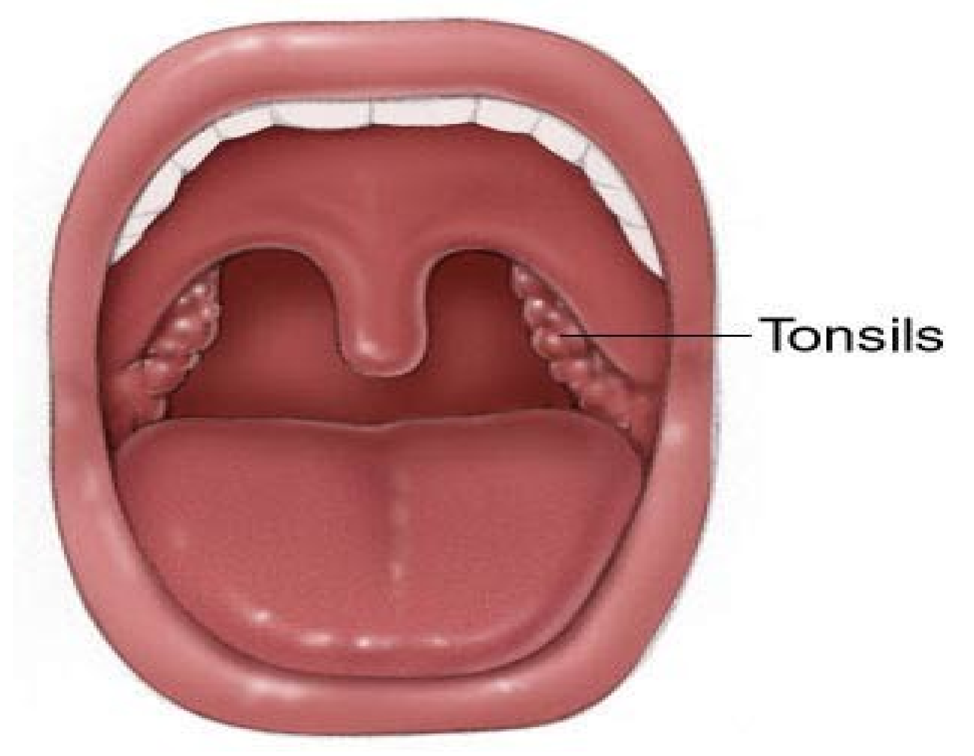
@ The most important member of this group is called the Jugulo-digastric L.N. :

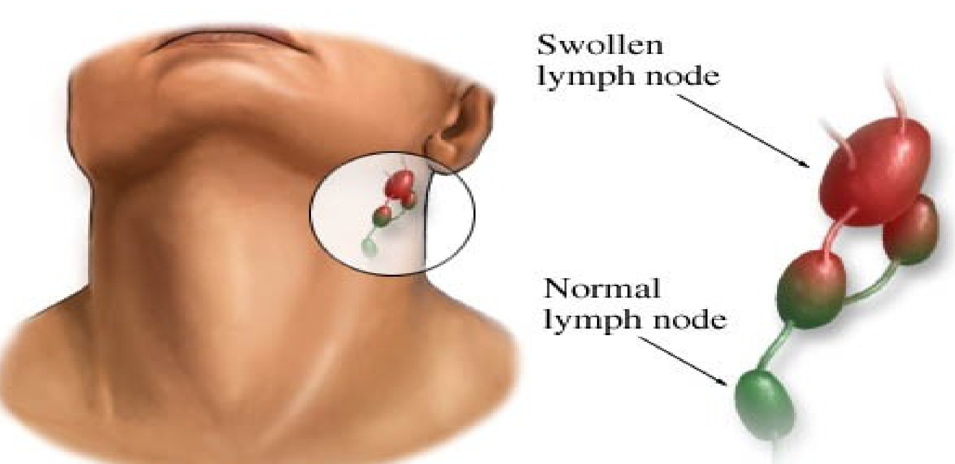
1- Lies in the angle between the I.J.V. and the post. belly of digastric M.

2- It is the main L.N. draining the tonsil (the most commonly enlarged L.N. in the body).

@ The upper deep cervical LNs send their efferent lymphatics to the lower deep cervical LNs.




Tonsils


Swollen lymph node
Normal lymph node

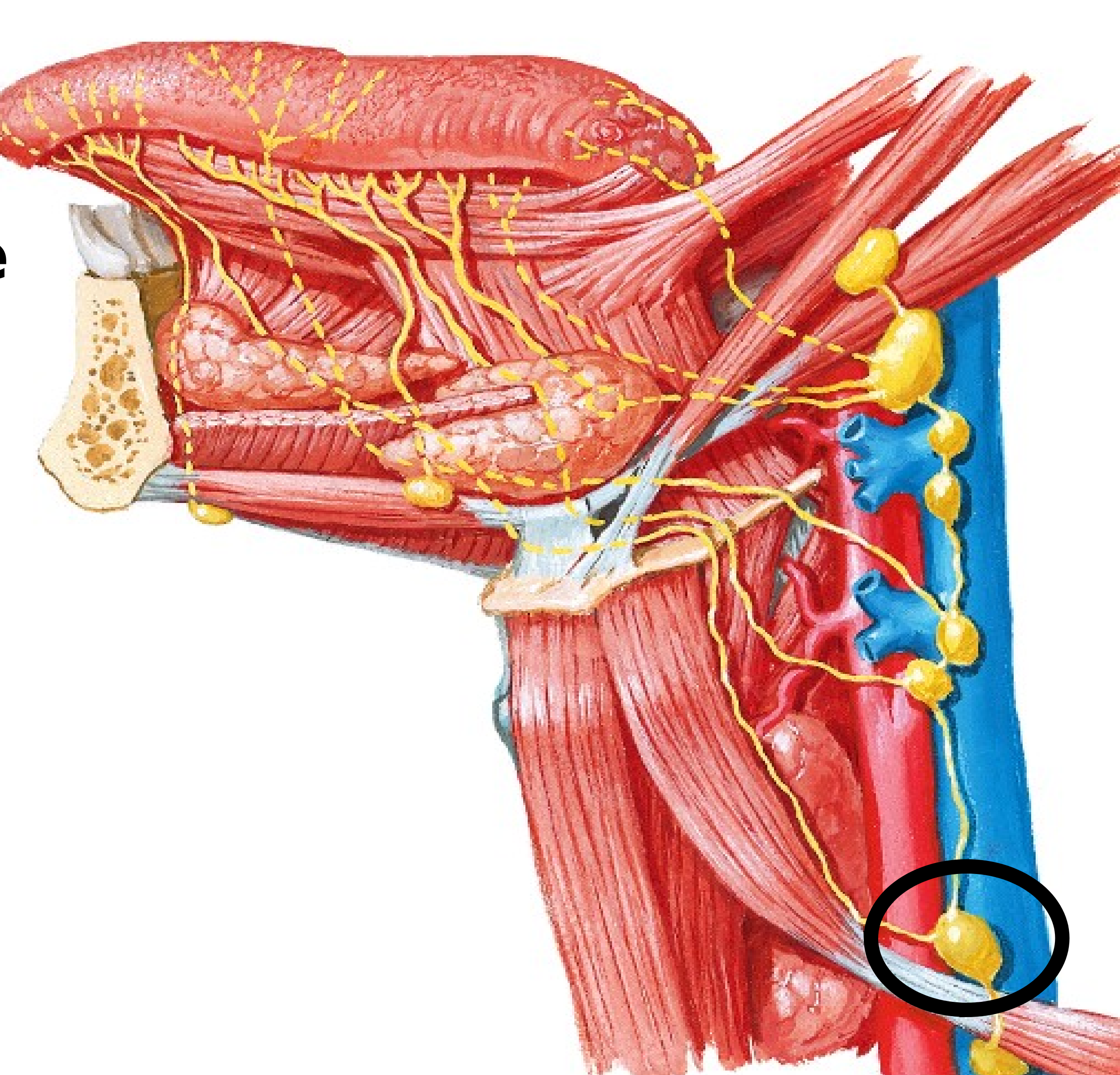

2. Lower deep cervical LNs:

@ **Arranged along the lower part of the I.J.V.**

@ **The most important member of this group is the Jugulo-omohyoid L.N.:**

1- Lies in the angle between the I.J.V. and the intermediate tendon of omohyoid m.

2- It is the FINAL L.N. draining the tongue.



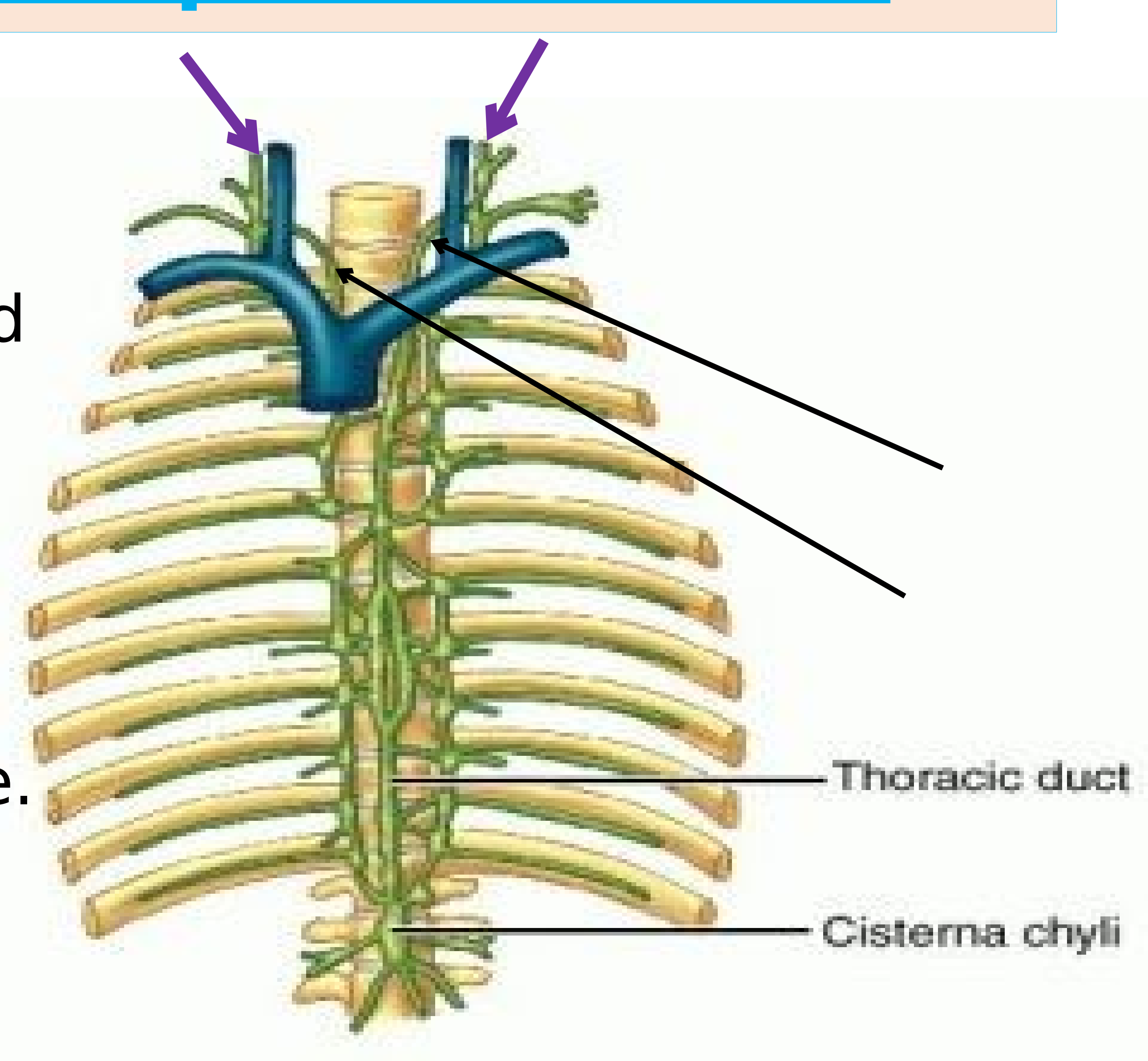
D. Vertical Group of Deep Cervical LNs.

@ The upper and lower deep cervical LNs drain all the superficial and deep circular groups of LNs in the head and neck.

@ Efferents from the lower deep cervical LNs collect to form the **Jugular Lymph Trunk** which ends in :

1- Thoracic duct on the left side.

2- Right lymphatic duct on the right side.



Lecture Quiz



A tumor of side of the tongue would primarily spread to which of the following lymph nodes?

A. Submental.
B. Submandibular.
C. Buccal.
D. Anterior cervical.
E. Superficial cervical.

Lecture Quiz Answer



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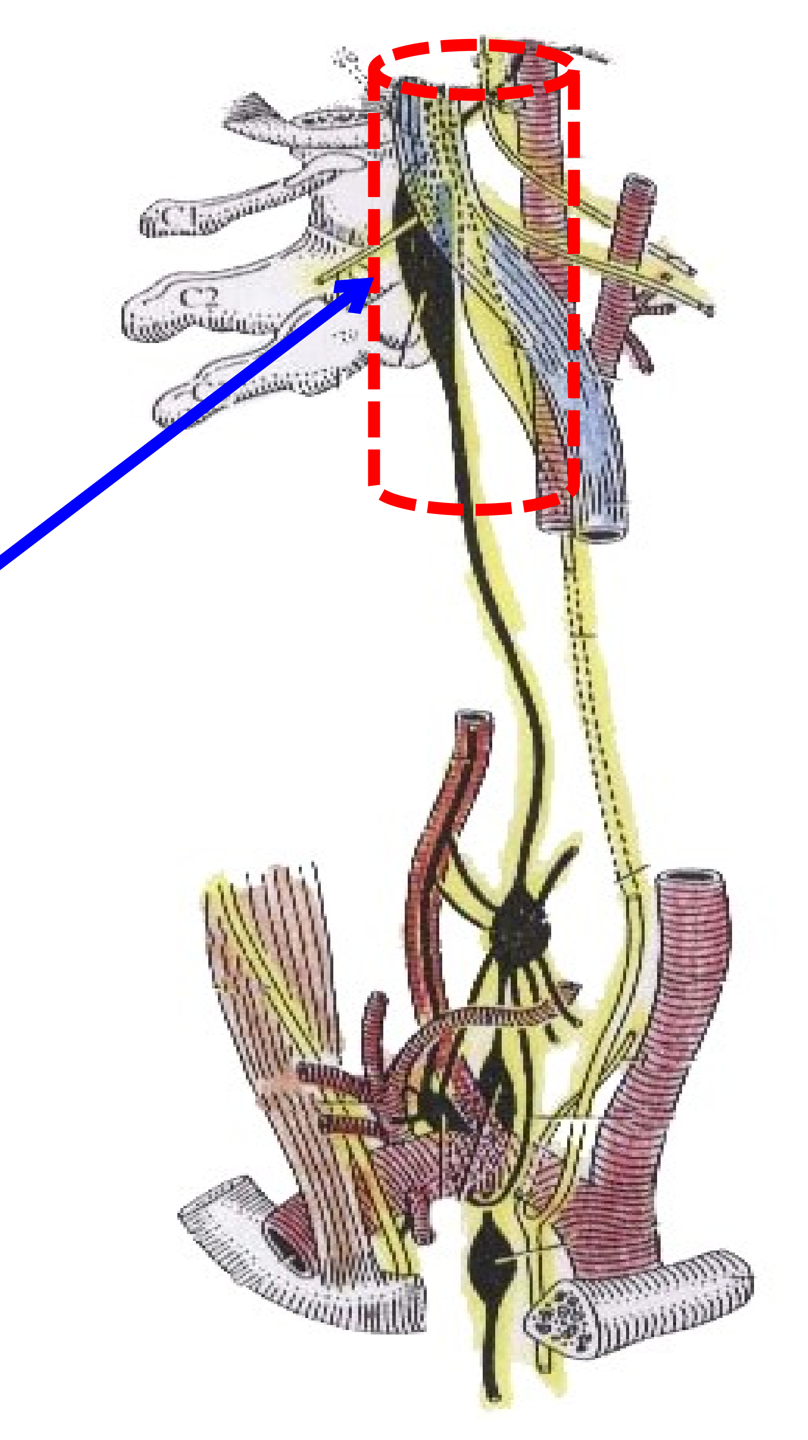
II. Cervical part of Sympathetic chain

Cervical part of Symp. Chain

- **Position**
- **Presents 3 ganglia**
- **Branches**
- **Applied**

* Position

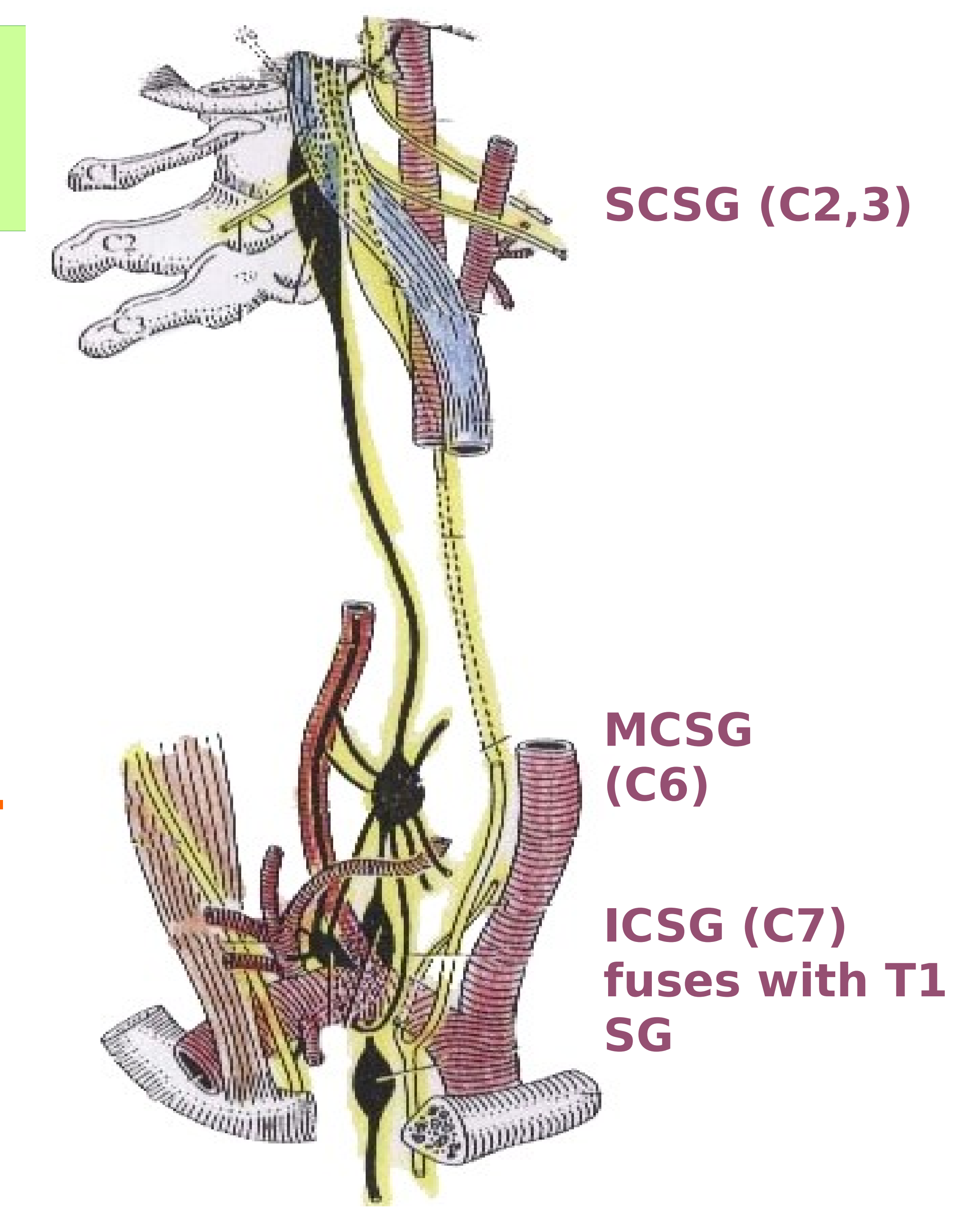
- Vertically embedded in the post. wall of the carotid sheath.
- Ant. to the transverse processes of C. vertebrae.



* Presents 3 ganglia

- **Sup. (SCSG) opposite C 2,3**
- **Midlle (MCSG) opposite C 6**
- **Inf. (ICSG) opposite C 7**

but ant. to the neck of 1st rib, the ICSG fuses with the 1st T. symp. ganglion forming **cervico-thoracic (stellate) ganglion**.



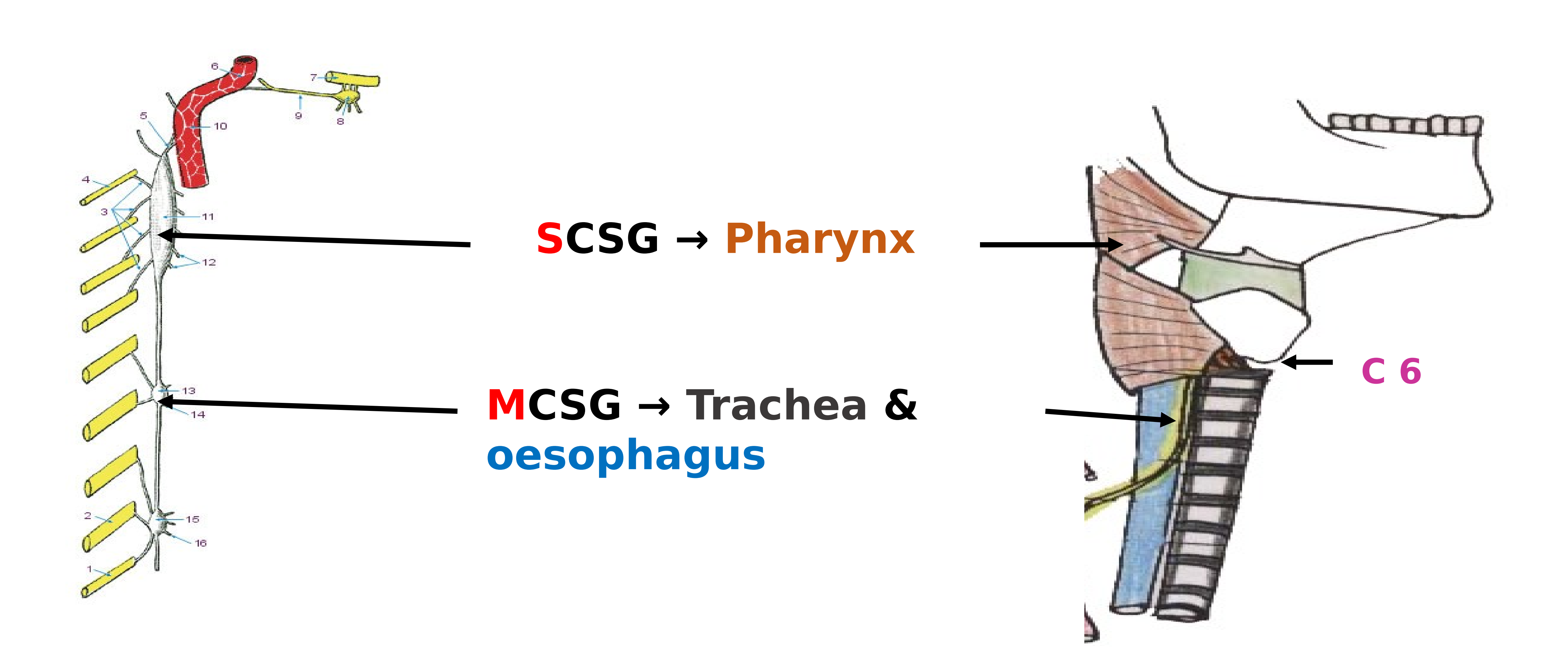
* Types of brs. of symp. ganglia

1- ***Communicating (with Ns.)*** → cutaneous blood vessels, sweat glands & erector pili Ms.

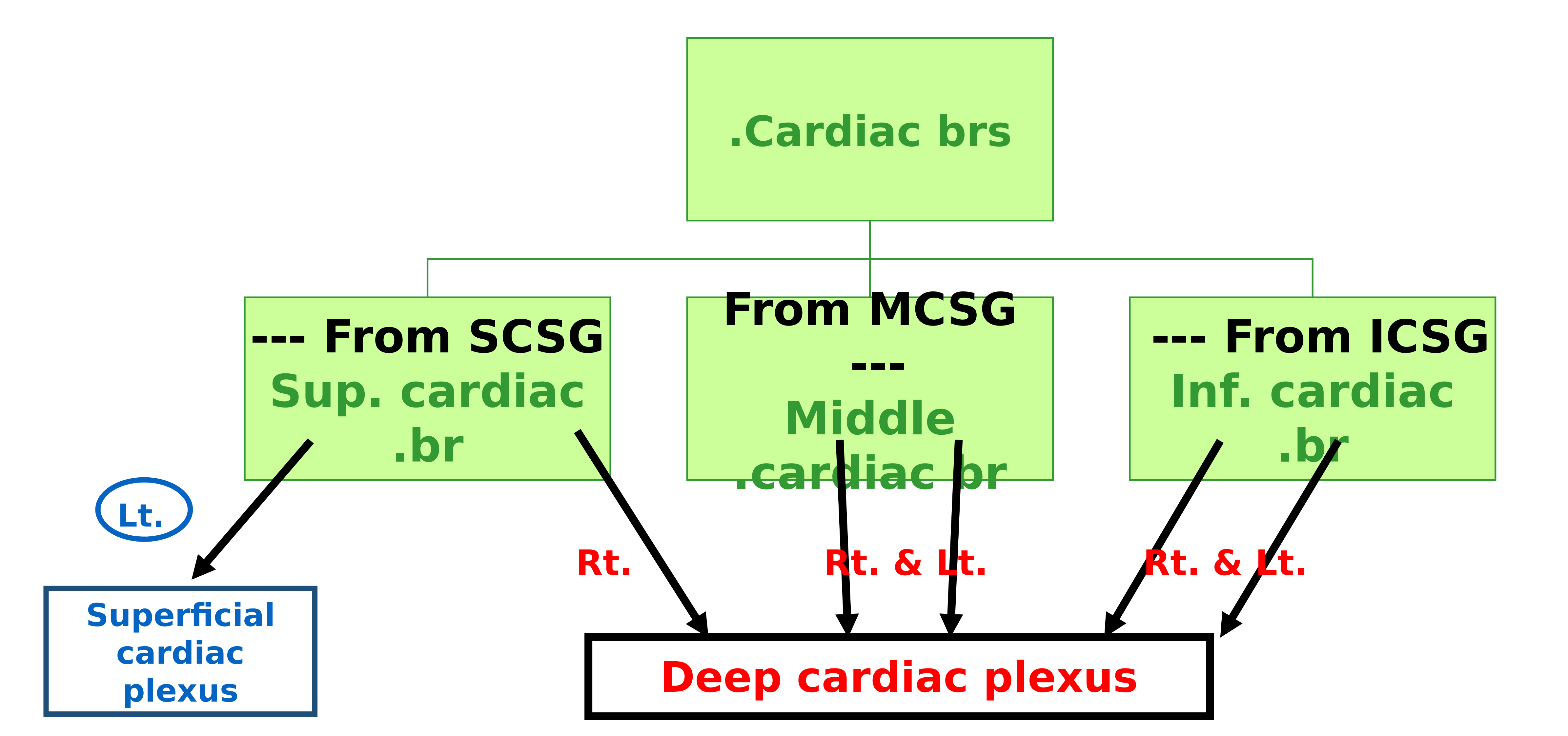
2- ***Vascular (plexus along As.)*** → structures in the distribution of the As.

3- ***Visceral*** → preganglionic & relay in terminal plexuses.

3- ***Visceral branches***



3- ***Visceral branches (cardiac)***



* Applied:

Its lesion → **Horner's syndrome**

(ptosis, miosis, anhydrosis & enophthalmos).

Lecture Quiz



Involvement of which structure is responsible for the following clinical findings (ptosis, miosis, anhydrosis & enophthalmos)?

a. Ansa cervicalis
b. Cervical sympathetic trunk
c. Accessory nerve
d. Hypoglossal nerve
e. Vagus

Lecture Quiz Answer



Involvement of which structure is responsible for the following clinical findings (ptosis, miosis, anhydrosis & enophthalmos)?

a. Ansa cervicalis

b. Cervical sympathetic trunk

c. Accessory nerve

d. Hypoglossal nerve

e. Vagus

III. Cervical Plexus

Cervical Plexus

- **Formed by the ant. 1ry rami of C 1-4.**
- **Site:**

1) <u>ant. to</u> scalenus medius & levator scapulae.

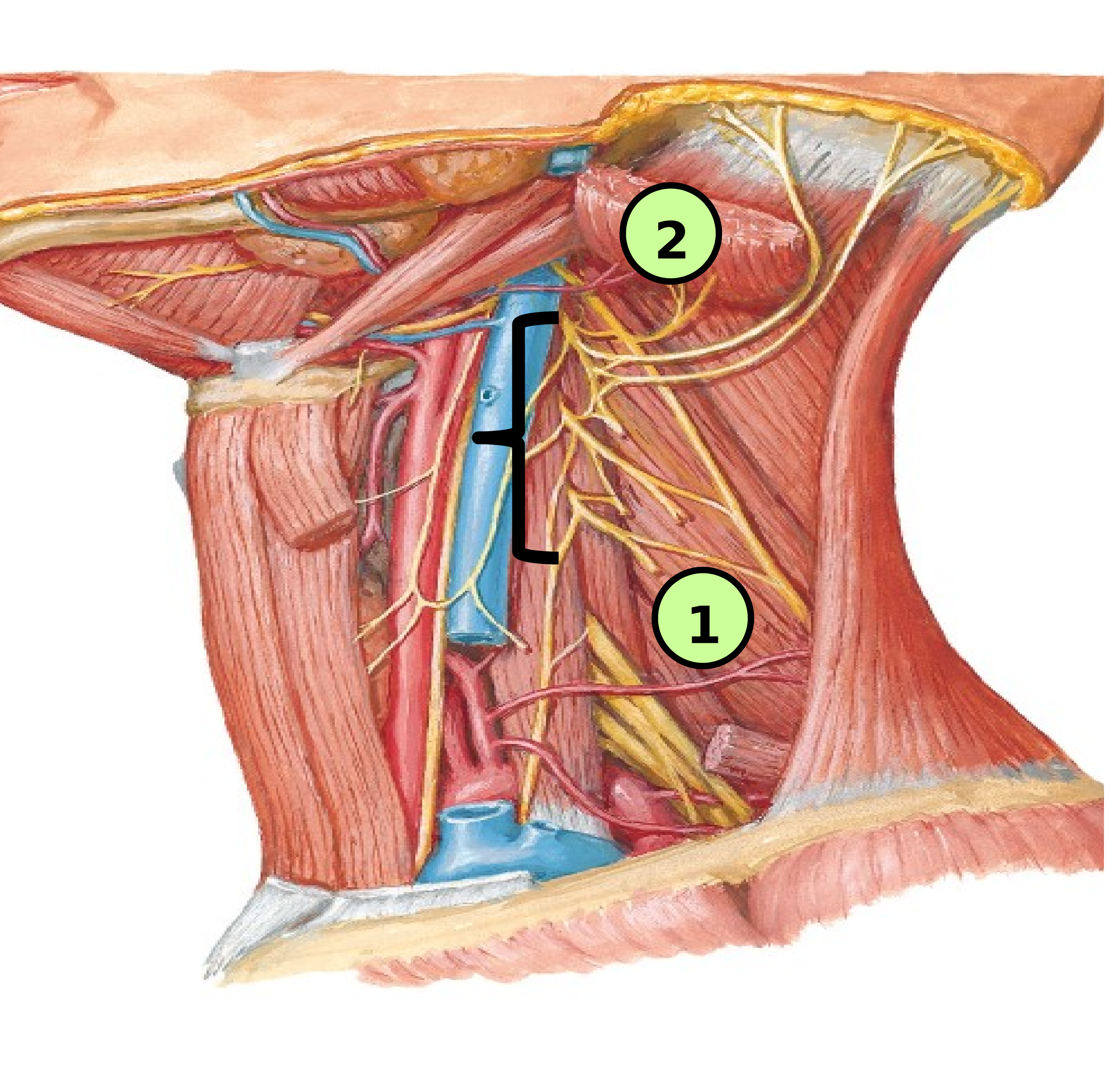
2) <u>post. to</u> sternomastoid.

3) <u>opposite to</u> C 1- 4 vertebrae.

- It is a plexus of LOOPS.

- Each N. (except C 1) divides into an ascending & a descending branches

They unite to form 3 Loops.



Branches

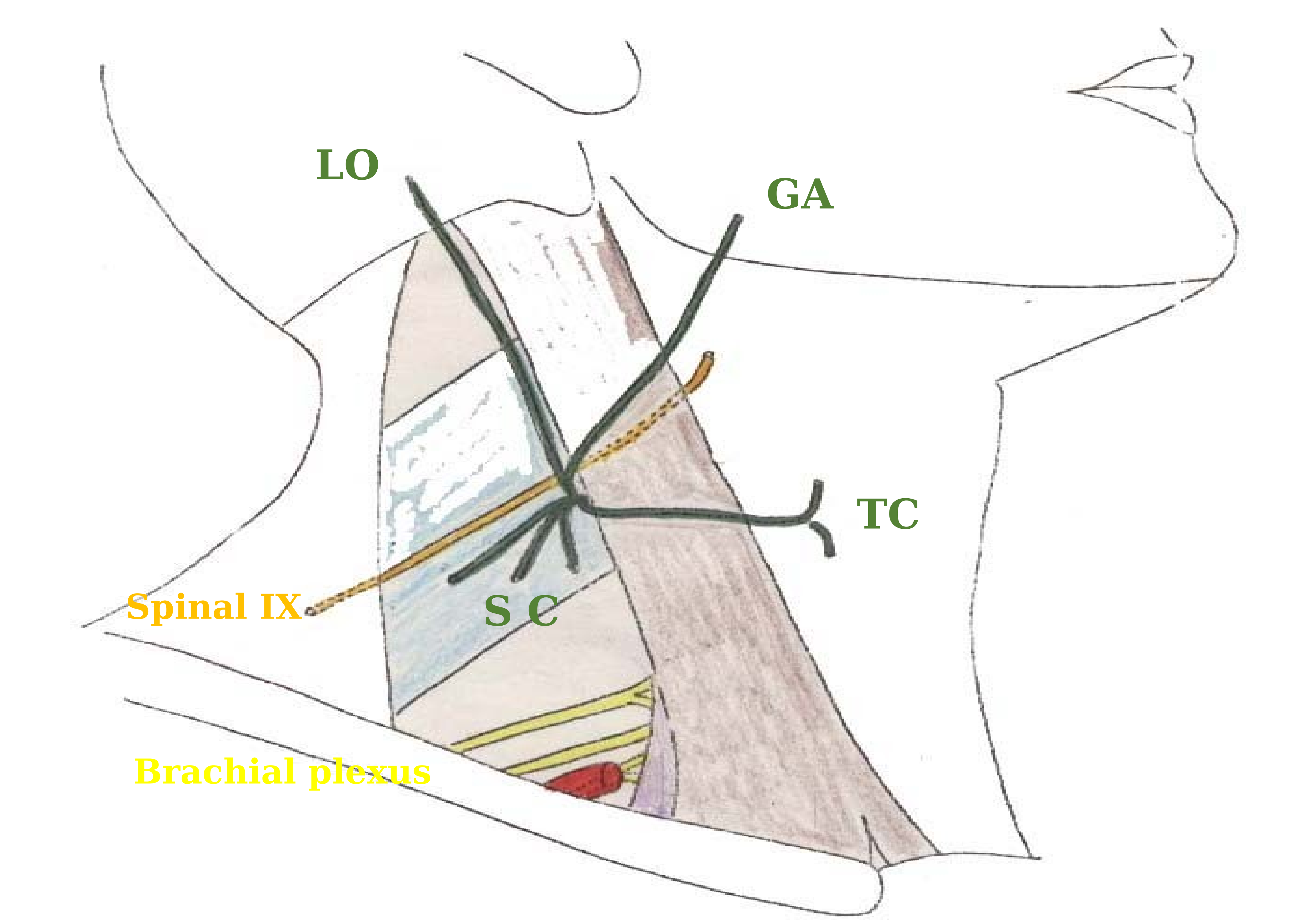
Cutaneous branches

1) Lesser occipital.
2) Great auricular.
3) Transverse cervical
4) Supraclavicular

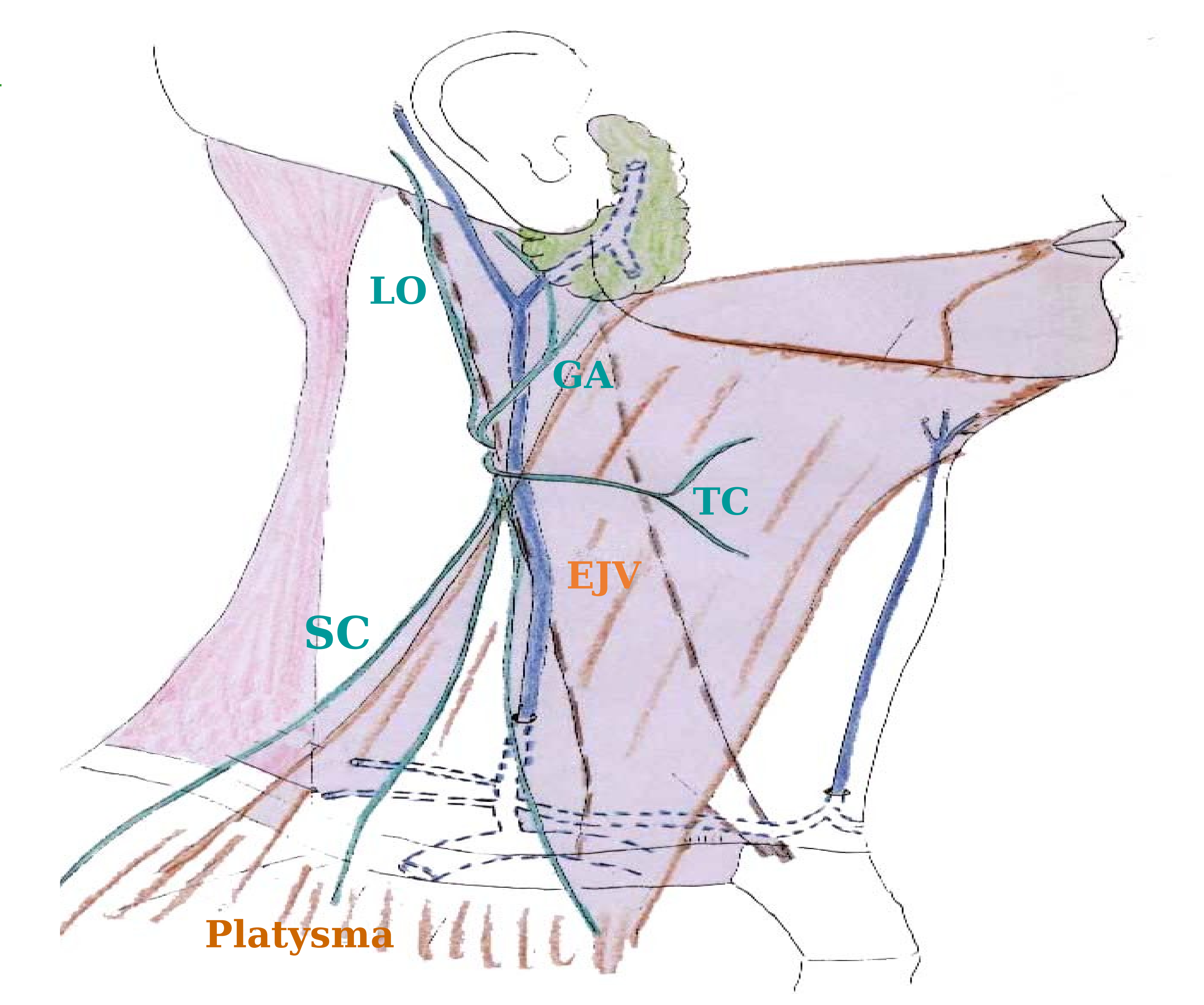
- **Deep (motor) branches to:**

1) **Levator scapulae M.**
2) **Scalene Ms.**
3) **Prevertebral Ms. (2 longus & 2 recti).**
4) **Descendens cervicalis (C 2,3)**

Cutaneous branches



Cutaneous branches



Lecture Quiz



Which of the following muscles is not supplied by cervical plexus branches?

A. Scalenus anterior.
B. Scalenus medius.
C. Scalenus posterior.
D. Sternomastoid.
E. Levator scapulae.

Lecture Quiz **Answer**



Which of the following muscles is not supplied by cervical plexus branches?

A. Scalenus anterior.
B. Scalenus medius.
C. Scalenus posterior.
D. Sternomastoid.
E. Levator scapulae.

SUGGESTED TEXTBOOKS



Snell, Clinical Anatomy, 7th edition, p. 587; 603-605;

619-620.

Thank you